

CZU 338.439.5(478)=111

COMPETITIVENESS OF MOLDOVA'S AGRI-FOOD SECTOR IN THE CONTEXT OF THE DEEP AND COMPREHENSIVE FREE TRADE AGREEMENT (DCFTA)

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Abstract. This research aims to assess the competitiveness of the Moldova's agricultural sector in the context of the DCFTA with EU. As indicator of the successful/unsuccessful development of the agri-food sector was taken the foreign trade activity. Thus, the given research analyses the changes in the agri-food trade structure during the period 1997-2012, the competitiveness of the agricultural sector and the pattern of trade flows. In order to assess the competitiveness of the agri-food products it was calculated the Grubel-Lloyd index (measuring the intra-industrial trade) and the RTA index (measuring the inter-industrial trade). The obtained results of both RTA and GL indices revealed the competitiveness of such commodity groups as: dairy products, cereals, edible vegetables, beverages and tobacco.

Key words: Agricultural sector; Agri-food trade; DCFTA; GL index; RTA index; Republic of Moldova

Abstract. Această lucrare are ca scop aprecierea competitivității sectorului agro-alimentar al Republicii Moldova în contextul Acordului Aprofundat și Comprehensiv de Liber Schimb cu Uniunea Europeană. Ca indicator al dezvoltării cu succes/eșec al sectorului agro-alimentar este luată activitatea economică externă, fiind analizate modificările în structura comerțului agro-alimentar în perioada 1997-2012, competitivitatea sectorului agricol și fluxurile comerciale respective. Pentru evaluarea competitivității produselor agro-alimentare sunt calculați indicii Grubel-Lloyd (ce măsoară comerțul intra-industrial) și RTA (ce măsoară comerțul inter-industrial). Rezultatele obținute pentru acești indici arată avantajele competitive pentru unele grupe de produse precum: lapte și produsele lactate, cereale, legume, băuturi și tutun.

Cuvinte cheie: Comerț agro-alimentar; DCFTA; Indice GL; Indice RTA; Sector agrar, Republica Moldova.

INTRODUCTION

Strong differences of the development level in the countries with former planned economy could be noticed even after twenty years of transition. This is related to the level of economic and social development, as well as to the level of integration of these countries in the world markets. Various researchers assessed the integration level of these countries in the world economy (Bonjec, S., Hartmann, M. 2004; Bergschmidt, A., Hartmann, M. 1998). In their works they established the level of competitiveness of one or another branch in a country. Nevertheless, it is not given the answer on how these results are related to the used advantages of labour division by branches (countries), or how much these results are determined by the successfulness or unsuccessfulness of the transition process (Levkovich, I., Hockmann, H. 2007).

Competitiveness is a key issue of the international markets and a major source of country's export development. When a country finds the best way to use its scarce resources in the agricultural sector, it can have a significant comparative advantage on foreign agricultural markets.

The aim of this paper is to evaluate the progress of the transition process and the competitiveness of Moldavian agri-food products on foreign markets, to analyze which economic and politic measures are necessary to increase their competitiveness especially on the EU market, in the context of the new DCFTA. Thus the main research questions are: what agri-food products can be produced? and which of them have a comparative advantage?

MATERIAL AND METHOD

This research analyzes some indicators of inter and intra industry trade. In order to evaluate country's comparative advantage (or of a particular sector), Bela Balassa (1965) elaborated the method that highlights the "Revealed Comparative Advantages" (RCA). This method is based on the assumption that the implicit comparative advantages are reflected directly in the trade flows. According to Balassa, comparative advantages are manifested in relatively high shares of a particular product/sector in the structure of exports. At the same time the relative limitations are reflected through low shares of a product/sector.

The RCA index or Balassa index is an indicator that characterizes the ratio of a commodity i in the total amount of country's exports and the share of this commodity in the total amount of world's exports. This index is based on observed trade patterns. This index is defined as follows:

$$B = (X_{ij}/X_{it}) / (X_{nj}/X_{nt}) \quad (1)$$

where: X – export; i – the country; j – the commodity; t – the set of commodities; n – the set of countries.

If $B > 1$, then a comparative advantage is revealed. The standard deviation of this index across products can be used as a measure of the comparative importance of inter-industry specialization or intra-industry trade.

An alternative specialization of revealed comparative advantage was developed by T.L. Vollrath (1991) and was called Relative Trade Advantage (RTA). The RTA index is calculated as the difference between the relative export advantage (RXA) or Balassa index and relative import advantage (RMA):

$$RTA = RXA - RMA \quad (2)$$

where, $RXA = B = (X_{ij}/X_{it}) / (X_{nj}/X_{nt})$;

$$RMA = B = (M_{ij}/M_{it}) / (M_{nj}/M_{nt});$$

M – import.

The positive value of RTA indicates comparative trade advantages, while the negative value indicates comparative trade disadvantages. When RTA is greater than zero, then a comparative advantage is revealed, which means that a sector of the country is relatively more competitive in terms of trade.

In order to assess the intra industry trade there have been developed some indicators, out of which the most used is the Grubel-Lloyd index (GL) (Grubel, H.G., Lloyd, P.J. 1975). According to it, intra industry trade is determined as the trade between countries, where the export costs of particular sector correspond to the import costs of same sector. The GL index determines the share of intra industry trade in the total amount of exports of a particular sector. In order to compute this index it is necessary to sum up particular trade flows. The index is changing in values from 0 to 100.

$$GL_i = \frac{[(X_i + M_i) - |X_i - M_i|]}{X_i + M_i}, \quad (3)$$

where, GL_i – index of intra industry trade;

X_i - value of export in industry i ;

M_i - value of import in industry i ;

$X_i + M_i$ - total value of trade;

$|x_i - M_i|$ - trade balance of industry i .

The closer the GL value is to 100, the more important is intra industrial trade, and the closer is GL value to 0 the more important is inter-industry trade. In order to establish an average level of intra-industry trade, Grubel and Lloyd proposed the weighted index to arrive at an overall measure of intra industry trade.

The traditional measure of intra industry trade is used and the Grubel Lloyd index is calculated as follows:

$$GL_i = 1 - \frac{|x_i - M_i|}{(x_i + M_i)} \quad (4)$$

where, X_i is the export in a certain line of goods and M_i is the import in the same commodity group.

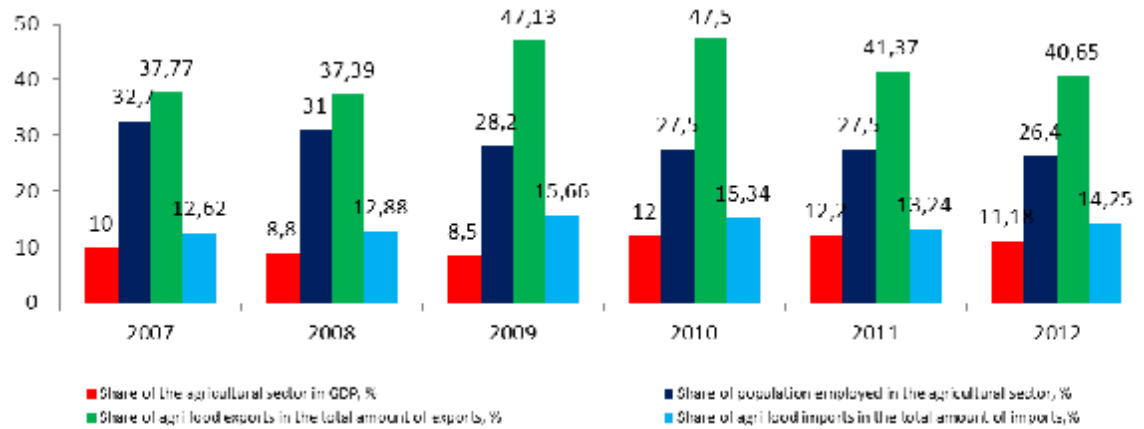
The value of GL_i index can vary between 0 and 1. The higher the value of this index, the higher is the level of intra industrial trade.

In order to assess the agri food trade indicators there were used data of the National Bureau of Statistics and COMTRADE according to the harmonized sections of commodities HS 2002. This research presents the analysis of 24 commodity groups from the agri-food sector. Out of these: the groups 01-15 include agricultural production, while the groups 16-24 – foodstuffs. Also, it was analyzed the agri-food trade by groups of countries: EU27, CIS and other countries.

RESULTS AND DISCUSSIONS

A central place in Moldova's economy belongs to the agri-food sector. It represents 30% of GDP, 40% of exports and 40% of population is employed in this sector; but only 2,5% of total FDI.

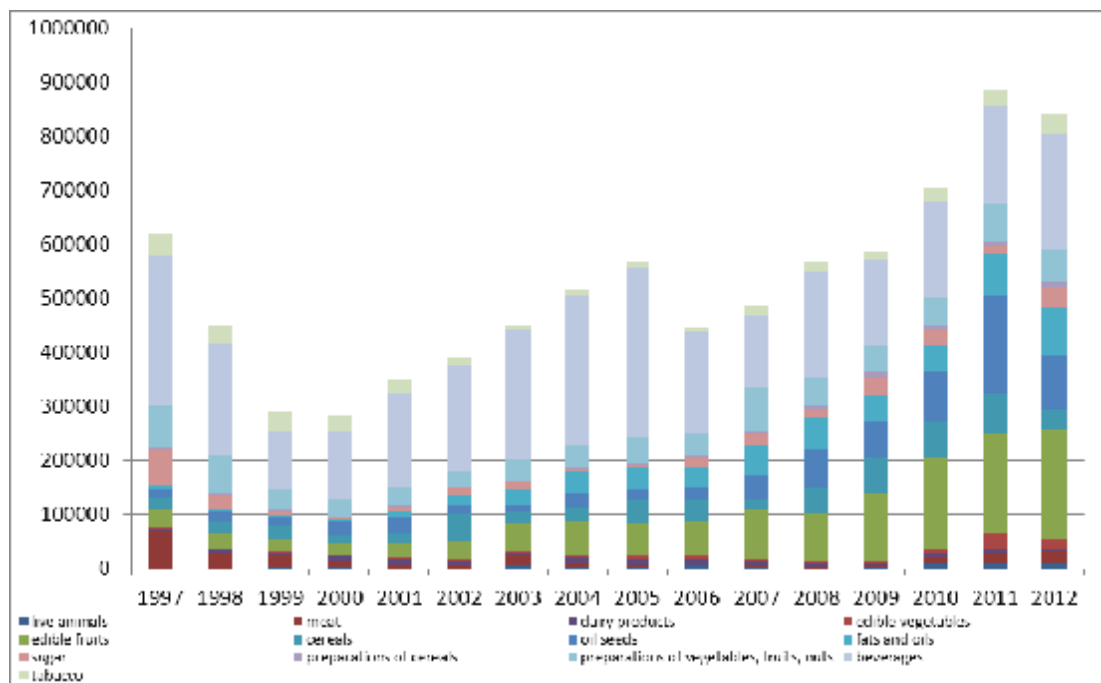
Economic transformations that took place since the early '90s led to negative processes in country's agro-industrial complex that caused changes in the shares between agriculture and industry, as well as the decrease of the amount of agricultural production.



Source: based on data of the National Bureau of Statistics

Figure 1. The development of the agri-food sector in the Republic of Moldova, 2007-2012

The largest share in the agricultural output belongs to crop production (about 70%) and namely: cereals (27%), potatoes and vegetables (19%), fruits and technical crops (14%), and grape (about 30%). As result, also in country's exports, the largest share belongs to foodstuffs, alcoholic drinks, and tobacco (about 45%), followed by vegetal products as sunflower seeds, walnuts, fruits and cereal crops (about 40%), animal and vegetal fats and oil (8%) and livestock (2%).



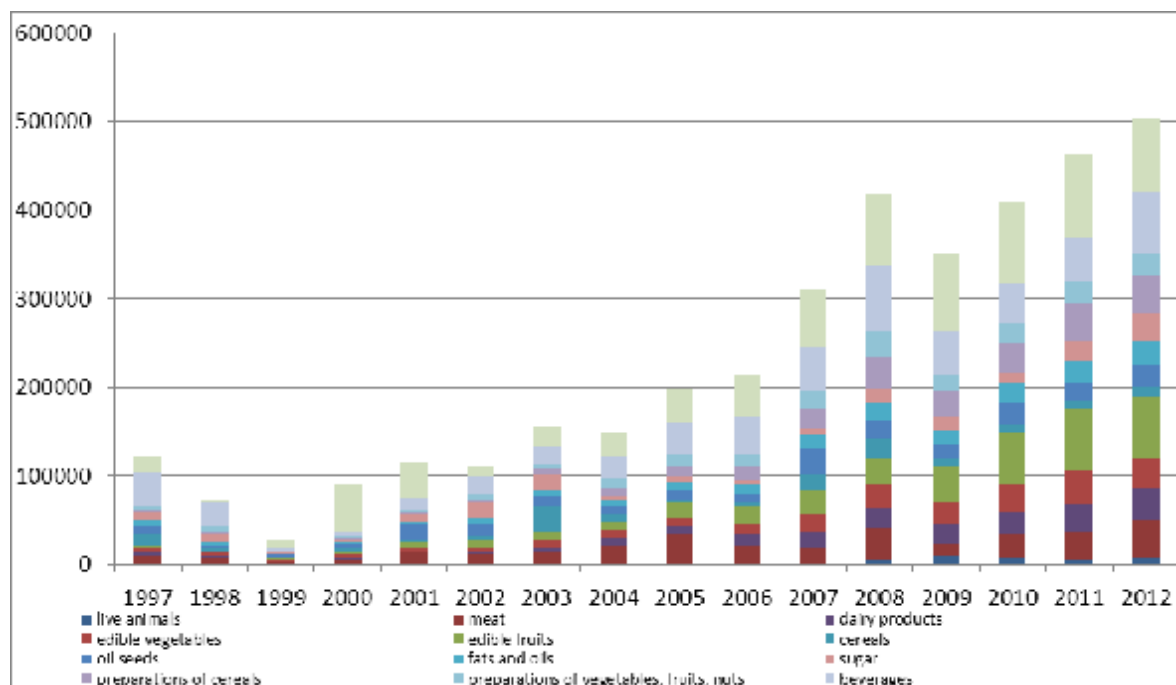
Source: based on data of the National Bureau of Statistics

Figure 2. Moldova's exports structure of agri-food products, 2007-2012

Moldova's agri-food export is dominated by a large share of commodities (commodity groups) and mainly: edible fruits and nuts – about 20% in 2012. The second place belongs to oil seeds and oleaginous fruits with a share of 19%, and they are followed by beverages, spirits and vinegar – about 17%. The commodity group of animal and vegetable fats and oils and processed vegetables, fruits, nuts or other parts of plants has a smaller share about 8% and 7%. Crop production is the leader in country's structure of exports. Unfortunately, crop production in Moldova is highly influenced by weather conditions, which leads to a certain instability in the amount of cash payments and as result to an unstable balance of payments.

Also, it should be mentioned that in 2012, out of the total amount of Moldova's agri-food exports the agricultural products represented about 80% (01-15 HS commodity group). At the same time, the share of food processing industry products is only 20%, which points to a not fully used potential in increasing the competitiveness of Moldova's agri-food sector.

If the largest share (more that 50%) in country's agri-food exports belongs to 3 main groups of commodities (beverages, oil seeds and edible fruits), then Moldova's agri-food imports are more diversified (Fig. 3).



Source: based on data of the National Bureau of Statistics

Figure 3. Moldova's import structure of agri-food products, 2007-2012

During 2007-2012, the structure of agri-food imports did not change significantly, except the import of sugar which increased by 3 times, edible fruits and edible vegetables increased by 2 times, cereal products (by 94%), fats and oils (56%) and tobacco (40%).

A major requisite for a country's economic development and constant growth represents the existence of a favorable policy framework. Unfortunately, this requisite was not really a characteristic of the Republic of Moldova. Nevertheless, certain improvement was noticed in the implementation of some economic policies and particularly the agricultural and trade policy. An important step was the redirection of Moldova's exports towards EU countries.

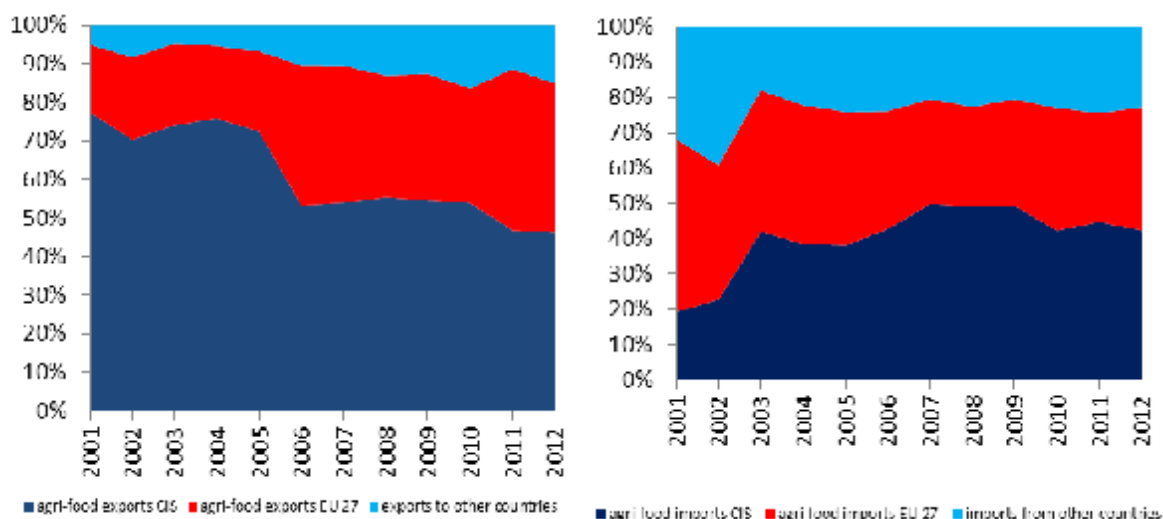
Another important step for Moldova's trade liberalization and its trade policy development was joining the World Trade Organization (WTO) in 2001. This was completed by another change in Moldova's trade policy and namely its accession to the Stability Pact for South-Eastern Europe which offered some additional opportunities for its exports. Since January 1st, 2006, Moldova has benefited from the General System of Preferences (GSP+) granted by the EU. Also, in 2008, Moldova obtained a larger access to the EU market through the Autonomous Trade Preferences (ATP), achieving a free trade advantage for some important products for country's economy such as alcoholic drinks, a number of agricultural products, sugar and others.

A Free Trade Agreement (FTA) represents an efficient tool for increasing trade flows between Moldova and EU countries and also for achieving its strategic objectives of future integration.

The key elements of a Free Trade Agreement are the dynamic effects arisen from changes in the economic growth, as result of large FDI. For countries in transition these investments are particularly important, mainly for the CIS countries where only a small amount of direct investments is invested. According to D. Bartasova (2008), a Free Trade Agreement will create favorable conditions for investments and will intensify the trade relations with European partners.

A deep and comprehensive free trade agreement (DCFTA) supposes not only the elimination of tariffs on bilateral trade of goods, but also provides regulations in various selected areas (competition policy, state aid etc.) for market integration. The implementation of such a DCFTA will generate major changes in the Republic of Moldova.

Some of Moldova's export products are already exempt from EU import tariffs and quotas, but at the same time there are charged high import tariffs for agricultural imports in the country. Most trade barriers are now non tariff measures such as trade-related transaction costs, different national regulations that increase the cost of market entry and others. An eventual FTA should reduce such non-traditional trade barriers (Perju, I. et al. 2010).



Source: based on data of the National Bureau of Statistics

Figure 4. Moldova's agri-food exports and imports with main trading partners, 2001-2012

Since 2008 about half of Moldova's exports were directed to EU countries and almost all the other half to CIS countries. As for the agricultural exports, mostly food, live animals, beverages and tobacco have a smaller share in EU than in CIS countries. This might be explained through Moldova's incapacity of facing the demanding sanitary standards (especially in the case of meat and dairy products) imposed by EU. Romania had a larger share in country's meat exports before joining the EU family. Concerning wine and other alcoholic products, the European market is highly competitive, fact which imposes difficulties in terms of price and quality for Moldova's products entering on this market.

Generally, Moldova's agri-food trade in 2001-2012 had significantly increased. The agri-food exports to EU increased twice in this period, and in 2012 it was about 339642 mio US dollars. Nevertheless, it should be mentioned that a share of food processing industry is about 58% out of the agri-food exports and the share of agricultural products is only 42%.

However, the share of other countries in Moldova's agri-food exports had increased a lot. Thus, in 2012 the agri-food exports to other countries amounted to 132566 mio US dollars, while the share of these countries in the agri-food imports of the country was of 20% (Fig. 4).

The total amount of Moldova's agri-food imports also had increased about twice during 2001-2012 (in the total amount and for each commodity group). At the same time the geographical structure of agri-food imports did not change significantly.

Agri-food imports from EU countries have also increased (about three times in the analyzed period) being of 258716 mio US dollars in 2012. Simultaneously, the agri-food imports from CIS and other countries have increased too.

The analysis of Moldova's agri-food trade flows structure proves the need of product and regional diversification, fact which will increase the stability of exports earnings and will decrease the dependence of local producers and exporters on partner country policies.

DCFTA will open new opportunities for local agricultural producers on larger markets with higher purchasing power and price stability. Meanwhile, they will face strong competition in terms of supply prices and quality, as well as product promotion policies. A positive impact of the DCFTA would be an increase of FDI in the agricultural sector as well as the modernization of agriculture and food processing industry.

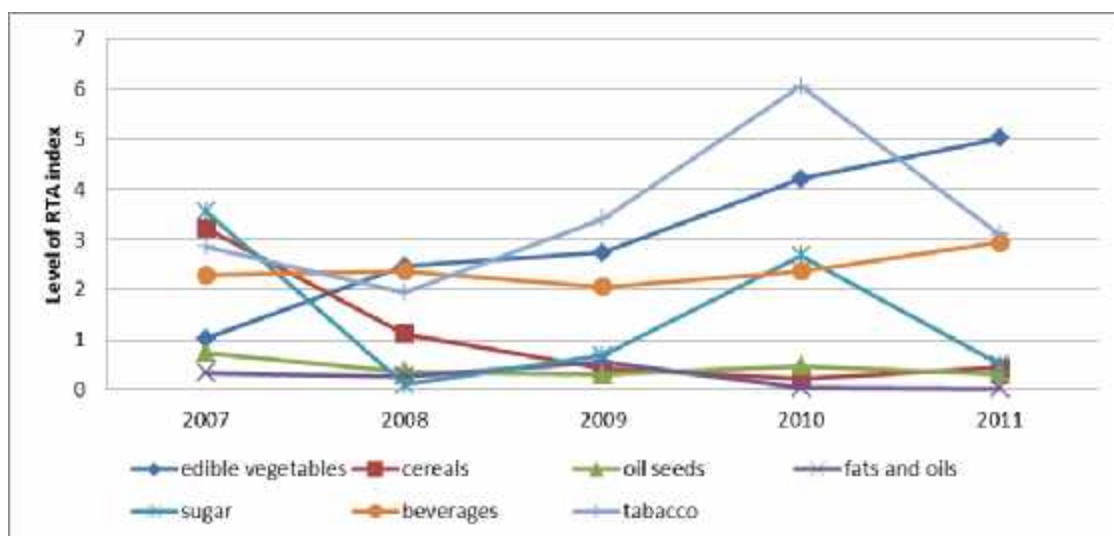
The expansion of free trade facilities on the exported products such as alcoholic drinks, sugar, cereals, and animal products will increase, in the long-term, the share of trade to EU countries. Nowadays, a large share of exports to EU is not entirely used. In order to promote country's export, it is necessary and important to use the products with comparative advantage, especially those with high value such as: wines and strong alcoholic beverages, fruits, vegetables, nuts, cereals, technical crops and organic agricultural products.

Nevertheless, Moldova's exports to EU and other developed countries face difficulties in terms of quality and food security, as well as low competitiveness. As for low competitiveness it includes the following directions: production factors (except land), economic potential and behavior of producers, competitive market, demand factors (quality and variety of demanded products, quality standards), the connection with food processing industry (quality and price of inputs). Nowadays, local prices are much lower than those on the international markets, which affect the profitability in the agricultural sector. Thus, the income in the agricultural sector is lower than in other sectors, causing lower productivity and quality of products, which are not competitive on foreign markets (Perju, I. et. al 2010).

If analyzing the level of revealed trade advantages index on commodity groups during 2007-2011 it is possible to distinguish groups of products that have positive index value, products with diminishing value and products with unstable RTA values (in some years some register high values, others decrease then increase again). The obtained results are presented in Figure 5 for some selected commodity groups.

The results revealed that in 2011, out of the analyzed agri-food products (commodity groups), 10 had positive values of RTA index, fact which demonstrates the relative trade advantages of Moldova on these commodity groups.

Higher levels of RTA index, within the agricultural products, are recorded by the dairy products (5.52), edible vegetables and certain roots and tubers (5.02). The highest values, within the group of food processing products are recorded by tobacco (3.09) and beverages (2.93).



Source: authors' calculations based on COMTRADE data

Figure 5. The dynamics of RTA index on different commodity groups, 2007-2011

A characteristic of revealed trade advantages for Moldova's agri-food products represents the decrease of RTA values for some commodity groups (12,15,17,19) such as: sugar from 3.5 in 2007 to 0.5 in 2011, fats and oils from 0.33 to 0.022, oil seeds from 0.7 to 0.3. The reasons of this decrease are mainly due to: old equipment and technologies, low efficiency of production, low product quality etc.

The level of intra industrial trade varies depending on the commodity group or partner country. Generally, the share of intra industrial trade varies from year to year and has not a clear tendency. On average the level of intra industrial trade is about 80%, which points to a foreign trade with comparative advantages.

Table 1. *The level of intra industrial trade of agri-food products, 2007-2011*

	2007	2008	2009	2010	2011
Total agri-food trade	95.9	96.85	92.12	89.55	85.64
Agricultural products (HS group 01-15)	99.2	99.14	81.76	81.04	72.28
Foodstuffs (HS group 16-24)	92.88	94.85	98.04	99.09	95.91

Source: author's calculations based on COMTRADE data

Both agricultural products and foodstuffs have high intensity of intra industrial trade. A slow decrease, from 99% to 72%, could be observed for the agricultural products in the analyzed period. While the GL index values of foodstuffs is high and unstable but it slowly increased up to 95% in 2011.

Table 2. *The level of intra industrial trade for different commodity groups of agri-food products, 2007-2011*

Commodity groups	2007	2008	2009	2010	2011
01 – Live animals	94.83	15.52	37.52	75.91	82.53
02 – Meat and edible meat offal	46.28	7.43	20.26	54.12	82.28
04 – Dairy products	50.21	54.85	37.15	34.25	40.41
07 – Edible vegetables and certain roots and tubers	24.78	25.40	28.04	45.03	78.46
08 – Edible fruits and nuts	47.16	51.39	48.59	51.42	53.59
10 – Cereals	95.34	61.76	24.91	24.07	24.59
12 – Oil seeds and oleaginous fruits	78.25	44.66	38.24	45.48	19.81
15 – Animal or vegetable fats and oils	44.93	49.85	48.09	57.69	48.87
Total agricultural production 01-15	99.20	99.14	81.76	81.04	72.28
17 – Sugars and sugar confectionery	47.41	97.03	58.42	60.27	86.61
19 – Preparations of cereals, flour, starch or milk, pastry cooks products	32.22	31.33	37.22	35.35	43.34
20 – Preparations of vegetables, fruit, nuts or other parts of plants	41.56	73.91	57.06	60.60	53.51
22 – Beverages, spirits and vinegar	52.14	55.63	46.18	40.28	43.42
24 – Tobacco and manufactured tobacco substitutes	37.71	39.28	30.17	45.79	47.23

Source: author's calculations based on COMTRADE data

The increasing values of GL index (for groups 02, 07, 17, 19, 20) is related to the high increase in the import of these products and decrease in their export. Such changes are good for consumers, because they obtain a higher variety of products. From the point of view of producers such an increase in the intra industrial trade is not connected with an increase of their income. For the groups 4, 10, 12, 22 the values of the index indicate the utilization of advantages or receiving extra earnings from intra industrial specialization, due to the concentration of production, decrease of production costs and increase of production efficiency. On the market, consumers benefit from the diversification of production.

CONCLUSIONS

1. The changeable and not continuous agricultural trade policies are those that determine the country's position on the international markets of agri-food products. At the microeconomic level, an important direction for increasing the competitiveness of agri-food products is to increase the efficiency and quality of products and modernize the food processing industry. Also, the investment climate, state support programs, liberalization of trade and political stability will create favorable conditions for the activity of agricultural producers and food processing companies on the international markets.

2. The level of RTA index indicates the competitiveness of some commodity groups on the international markets and namely: out of the agricultural products one could notice the dairy products (5.52) and edible vegetables and certain roots and tubers (5.02). As for the food processing products the highest values are recorded by tobacco (3.09) and beverages (2.93).

3. Nowadays, the comparative advantages of Moldova are not fully used. This is explained by decreasing values of RTA index for some commodities groups (12, 15, 17, 19). Price level, trade liberalization and low state support are related to the given situation. Another important factor is the lack of long-term funding that affects not only particular sub sectors but also the entire agri-food sector.

4. The results of GL index recorded by the groups 4, 10, 12, 22 indicate the utilization of advantages or receiving extra earnings of intra industrial specialization, due to the concentration of production, decrease of production costs and increase of production efficiency.

5. DCFTA will open new opportunities for the agricultural producers on larger markets with high purchasing power and price level stability. Meanwhile, they will face strong competition in terms of supply prices and quality, as well as product promotion policies. A positive impact of the DCFTA would be an increase of FDI in the agricultural sector as well as the modernization of agriculture and food processing industry.

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Data prezentării articolului: 27.03.2014

Data acceptării articolului: 05.05.2014